SUPPLEMENTARY INFORMATION FOR:

Real-Time Single-Molecule Observation of Rolling Circle DNA Replication

Nathan A Tanner[1*], Joseph J Loparo[1*], Samir M Hamdan[1], Slobodan Jergic[2], Nicholas E. Dixon[2], and Antoine M. van Oijen[1]

*: These authors contributed equally to this work

[1] Dept. of Biological Chemistry and Molecular Pharmacology, Harvard Medical School 250 Longwood Avenue, Boston, MA 02115

[2] School of Chemistry, Building 18, Northfields Avenue, University of Wollongong, Wollongong, NSW 2522, Australia

Correspondence should be sent to A.M.v.O. (antoine_van_oijen@hms.harvard.edu)

SUPPLEMENTARY MOVIE CAPTIONS:

Movie S1 shows a high density of replication of DNA molecules by T7 replisomes, demonstrating our ability to achieve high numbers of replication products in each field of view. Width of the visible area is 125 μm (equivalent to 376 kilo-basepairs) in all movies. Flow direction is from right of the visible region to the left, and the movie contains 2 minutes 30 seconds of experimental data imaged at 2 frames per second.

Movie S2 is at lower T7 protein concentration, used for accurately determining rates of synthesis by single-molecule observation. Lowering the density of products in the field allows higher accuracy in tracking the endpoint of the DNA over time. Movie contains 3 minutes of experimental data imaged at 1 frame per second.

Movie S3 shows replication by E. coli replisomes. Note the substantial increase in product length and in the rate of product growth in the flow direction. Movie is 3 minutes imaged at 1 frame per second.